

## **REMARKS/ARGUMENTS**

The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the following remarks.

The Applicants originally submitted Claims 1-20 in the application. Presently, the Applicants have neither amended, canceled, nor added any claims. Accordingly, Claims 1-20 are currently pending in the application.

### **I. Rejection of Claims 1 and 9 under 35 U.S.C. §103**

The Examiner has rejected Claims 1 and 9 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,546,480 to Burnham, *et al.* (Burnham) in view of U.S. Patent No. 5,708,674 to Beernink, *et al.* (Beernink). Independent Claims 1 and 9, include the element that a diffusion barrier region including aluminum be located over an undoped layer located over an active region, and between the undoped layer and a doped upper cladding layer. Neither Burnham nor Beernink teaches or suggests such elements.

In contrast to that claimed, Burnham is directed to an injection laser having quantum size effect transparent waveguiding. (Title) Burnham teaches that the laser includes an active layer 36 located on a lower cladding layer 34, wherein the active layer 36 has an upper cladding layer 41 formed directly thereon. (See FIG. 2 and column 4, lines 20-60). Burnham teaches that the active layer 36 may include an active region 38. In an alternative embodiment, Burnham teaches that the active layer 36 may comprise multiple quantum well passive regions 36.1. (Column 5, lines 45-48). Burnham further teaches that the device of FIG. 4 is identical to that of FIG. 2, except that the active

layer 36 of FIG. 4 comprises the aforementioned quantum well passive regions. These quantum well passive regions, may, according to Burnham, include aluminum therein, however, they must according to the description form a portion of the active region.

The teachings and suggestions of Burnham are different from that claimed for a number of distinct reasons. Most importantly, however, Burnham fails to even teach or suggest a diffusion barrier region including aluminum. The Examiner incorrectly asserts that the aforementioned active layer 36 of Burnham is similar to the diffusion barrier region currently claimed in the present invention. To the contrary, the active layer 36 is just what its name suggests. In other words, the active layer 36 is the portion of the device configured to create the optical signal, or laser, which is similar in function to the active region claimed in the present invention. Accordingly, the active layer 36 is not acting as a diffusion barrier region as the Examiner suggests, but acting as a standard active region configured to create a desired optical signal. Therefore, Burnham fails to disclose a diffusion barrier region at all.

Nevertheless, even if the Examiner fails to agree with the argument set forth above, the so called diffusion barrier region including aluminum of Burnham forms a portion of its active layer 36, as its name suggests. The Examiner can not deny this, as the specification of Burnham is quite clear on this point. If Burnham intended the aluminum containing layer(s) (e.g., the active layers) of its device not to form a portion of its active layer or active region, it would not have referred to it as the active layer 36 throughout the entire patent. With that said, Burnham fails to teach both an active region and a diffusion barrier region including aluminum, as claimed by the present invention, because Burnham only teaches one region that either acts as an active region or acts as a diffusion barrier region depending on what element the Examiner is looking for. The Examiner is not allowed

to ascribe one feature dual purposes, and thereby argue the features are obvious, when the claimed invention claims two distinct features.

Beernink fails to correct the deficiencies of Burnham. The Examiner is offering Beernink for the sole proposition that the active layer may be situated beneath the diffusion barrier layer. Notwithstanding the accuracy of the Examiner's assertion, a teaching of situating an active layer beneath the diffusion barrier layer is far from that which is presently claimed in independent Claims 1 and 9. Accordingly, Beernink also fails to teach or suggest the element that a diffusion barrier region including aluminum be located over an undoped layer located over an active region, and between the undoped layer and a doped upper cladding layer.

Thus, Burnham, individually or in combination with Beernink, fails to teach or suggest the invention recited in independent Claims 1 and 9, when considered as a whole. Accordingly, the combination fails to establish a prima facie case of obviousness with respect to Claims 1 and 9.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 1 and 9 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

## **II. Rejection of Claims 2-8 and 10-16 under 35 U.S.C. §103**

The Examiner has rejected Claims 2-8 and 10-16 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,546,480 to Burnham, *et al.* (Burnham) in view of the foreign Patent No. WO 97/50133 to DePoorter (DePoorter). Independent Claims 1 and 9, as indicated above, include the element of a diffusion barrier region including aluminum be located over an undoped layer located over an active region, and between the undoped layer and a doped upper

cladding layer. Interestingly, the Examiner above believed that he needed the combination of Burnham and Beernink to make obvious the teachings of independent Claims 1 and 9. The Examiner has, however, not included the Beernink reference in this rejection. Nevertheless, as established above, Burnham alone or in combination with Beernink fails to teach or suggest these elements.

Similarly, DePoorter fails to teach or suggest these elements. The Examiner is offering DePoorter for the sole proposition that the upper cladding layer may be doped with zinc. Notwithstanding the accuracy of the Examiner's assertion, a teaching of doping an upper cladding layer with zinc is far from that which is presently claimed in independent Claims 1 and 9. Accordingly, DePoorter also fails to teach or suggest the element that a diffusion barrier region including aluminum be located over an undoped layer located over an active region, and between the undoped layer and a doped upper cladding layer.

Thus, Burnham, individually or in combination with DePoorter, fails to teach or suggest the invention recited in independent Claims 1 and 9 and their dependent claims, when considered as a whole. Accordingly, the combination fails to establish a prima facie case of obviousness with respect to Claims 1 and 9. Claims 2-8 and 10-16 are therefore not obvious in view of Burnham and DePoorter.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 2-8 and 10-16 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

### **III. Allowability of Claims 17-20**

The Examiner has failed to reject Claims 17-20 for any reason. Accordingly, the Examiner concedes that Claims 17-20 contain allowable subject matter. Therefore, the Applicants kindly request the Examiner to pass these claims on to issuance.


### **IV. Conclusion**

In view of the foregoing remarks and amendments, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-20.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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